

Listing of Claims:

Claim 1 (currently amended): A projection type display apparatus comprising:

an illumination optical system for radiating illumination light;

a mirror array device for forming an image, which has an arrangement in which ~~having~~ a plurality of tiltable pixel mirrors each having a diffraction grating on a surface thereof are arranged in an array, said mirror array device separating said illumination light from said illumination optical system to a plurality of color lights, and reflecting said plurality of color lights to the respective directions different from each others ~~to perform optical modulation by the plurality of pixel mirrors;~~

~~an illumination optical system for illuminating said mirror array device; and~~

a projecting optical system for projecting reflected light which are reflected to predetermined directions among said plurality color lights reflected by ~~from~~ said mirror array device ~~onto a projected surface.~~

Claim 2 (original): An apparatus according to claim 1, wherein each pixel mirror is not tilted to display black on the projected surface.

Claim 3 (original): An apparatus according to claim 1, wherein the tilt angle of each pixel mirror is maximized to display black on the projected surface.

Claim 4 (original): An apparatus according to claim 1, wherein each pixel mirror is tilted by a predetermined angle to do display black on the projected surface.

Claim 5 (original): An apparatus according to claim 1, wherein said projecting optical system has an aperture which shields, of the reflected light components from said mirror array device, a light component which is not to be projected onto the projected surface.

Claim 6 (original): An apparatus according to claim 1, wherein a color to be displayed on the projected surface is switched by changing a tilt angle of each pixel mirror.

Claim 7 (original): An apparatus according to claim 1, wherein a color to be displayed on the projected surface is switched between red, green, and blue by changing the tilt angle of each pixel mirror.

Claim 8 (original): An apparatus according to claim 1, wherein

tilt angles of the pixel mirrors have a plurality of angle ranges that do not overlap, and
a color of light to be projected onto the projected surface is switched by switching the
angle range of the tilt angle.

Claim 9 (original): An apparatus according to claim 1, wherein

tilt angles of the pixel mirrors have first, second, third, and fourth angle ranges that do
not overlap,

when the tilt angle falls within the first range, red is displayed on the projected surface,
when the tilt angle falls within the second range, green is displayed on the projected
surface,

when the tilt angle falls within the third range, blue is displayed on the projected surface,
and

when the tilt angle falls within the fourth range, black is displayed on the projected
surface.

Claim 10 (original): An apparatus according to claim 9, wherein gray level display of each color is performed by changing the tilt angle of each pixel mirror within the first, second, or third angle ranges.

Claim 11 (original): An apparatus according to claim 1, wherein gray level display of each color is performed by changing the tilt angle of each pixel mirror.

Claim 12 (original): An apparatus according to claim 1, wherein color display of one pixel is performed by mixing the color light components from the pixel mirrors by time color mixing.

Claim 13 (original): An apparatus according to claim 1, wherein color display of one pixel is performed by mixing the color light components from the plurality of pixel mirrors adjacent to each other.

Claim 14 (original): An apparatus according to claim 1, wherein the diffraction grating is an echelon grating.

Claim 15 (original): An apparatus according to claim 1, wherein in a section perpendicular to a rotational axis in tilting the pixel mirror, the diffraction grating has a staircase shape.

Claim 16 (original): An apparatus according to claim 1, wherein a direction in which light diffracted by the pixel mirror is distributed and a tilt direction of the pixel mirror are in the same plane.

Claim 17 (original): An apparatus according to claim 1, wherein each diffracted light of each color is deflected in a separation direction of each color light component diffracted by the pixel mirror by tilting the pixel mirror.

Claim 18 (currently amended): A mirror array device comprising:

a plurality of tiltable pixel mirrors each having a diffraction grating on each of surfaces thereof ~~a surface~~, and arranged in an array,

wherein said mirror array device separates illumination light from an illumination optical system to a plurality of color lights, and reflects said plurality of color lights to the respective

directions different from each others so as to from an image ~~optical modulation is executed by said plurality of pixel mirrors.~~

Claim 19 (original): A device according to claim 18, wherein the diffraction grating is an echelon grating.

Claim 20 (original): A device according to claim 18, wherein a direction in which light diffracted by said pixel mirror is distributed and a tilt direction of said pixel mirror are in the same plane.

Claim 21 (original): A device according to claim 18, wherein each diffracted light of each color is deflected in a separation direction of each color light component diffracted by said pixel mirror by tilting the pixel mirror.